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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,326	01/14/2002	Onur G. Guleryuz	AP121TP	7104

20178 7590 08/28/2003

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EXAMINER

CHEN, PO WEI

ART UNIT PAPER NUMBER

2697

DATE MAILED: 08/28/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

CA

Office Action Summary

Application No.

10/047,326

Applicant(s)

GULERYUZ ET AL.

Examiner

Po-Wei (Dennis) Chen

Art Unit

2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 25-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Claims 1-32 are pending in this application. Claims 1, 9, 17, 25 and 30 are independent claims. This action is non-final

The present title of the invention is "Fast Text/Graphics Resolution Improvement with Chain-Code Table Look-Up".

The Group Art Unit of the Examiner case is now 2697. Please use the proper Art Unit number to help us serve you better.

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-24, drawn to improving resolution of a digital representation, classified in class 345, subclass 581.
 - II. Claims 25-32, drawn to constructing a chain-code-addressable look-up table, classified in class 345, subclass 601.
2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the subcombination (group II) specifies the construction of a look-up table. The subcombination has separate utility such as a look-up table that can be used for other applications that do not need the method of improving resolution of a digital representation of group I.

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3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Michael T. Gabrik on August 12, 2003, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-24. Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5, 8, 9-13, 16, 17-21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Overton (US 5,537,495) and further in view of Ohta (US 5,448,692).

7. Regarding claim 1, Overton discloses a pixel correction and smoothing method comprising:

A method for improving resolution of a digital representation having a plurality of text or graphics pixels (lines 16-29 of column 2 and lines 50-52 of column 4);

Constructing an identifier for that local boundary segment and parameterizing and smoothing that local boundary segment, resulting in a new local boundary segment, by computing instructions for parameterizing and smoothing that local boundary segment;

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rendering the parameterized and smoothed boundary segment to improve the resolution of the text or graphics object. (lines 19-56 of column 2 and lines 21-39 of column 8 and Fig. 2-3);

Overton does not disclose identifying a text or graphics pixel on a boundary of a text or graphics object of the digital representation and for each text or graphics pixel identified as on the boundary, tracing a group of pixels, including the initial boundary identified pixel, that constitute a local boundary segment. Ohta discloses a digital image processing device utilize the method (lines 35-48 of column 9 and Fig. 15-17). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Ohta to provide the advantage of effecting digital image processing with a desired area without damaging the image (lines 56-60 of column 1, Ohta). Also, both Overton and Ohta are directed to segmentation image processing.

8. Regarding claim 2, Overton discloses a pixel correction and smoothing method comprising:

The instructions are pre-computed, stored in a look-up table, indexed by the corresponding identifier (lines 1-11 of column 4; output tiles corresponds to the instructions used for rendering process), and directly accessed during the parameterizing and smoothing of that local boundary segment (lines 21-29 and Fig. 3-4).

9. Regarding claim 3, Overton discloses a pixel correction and smoothing method comprising:

The constructing of the identifier is based on the relative locations of the pixels in the group that constitute the corresponding local boundary segment (lines 5-23 of column 8 and Fig. 3).

10. Regarding claim 4, Overton does not disclose the tracing step comprises identifying first and second contiguous sub-groups of pixels, each starting with the initial pixel and extending in first and second directions respectively relative to a known background pixel and, if available, a just-identified pixel in that sub-group, and wherein the identifier assigned to the corresponding local boundary segment is a chain-code constructed based on the tracing step. Ohta discloses a digital image processing device utilize the method (lines 35-68 of column 9 and lines 1-29 of column 10 and Fig. 15-17). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Ohta to provide the advantage of effecting digital image processing with a desired area without damaging the image (lines 56-60 of column 1, Ohta). Also, both Overton and Ohta are directed to segmentation image processing.

11. Regarding claim 5, as statement presented above, with respect to claim 4 are incorporated. Also, it is noted that depending on inner or outer contour, the tracing direction is different and 8 pixels, which surround the starting pixel, are traced and assigned with chain code.

12. Regarding claim 8, as statements presented above, with respect to claim 1 are incorporated.

13. Regarding claims 9-13 and 16, as statements presented above, with respect to claims 1-5 and 8 are incorporated.

14. Regarding claims 17-21 and 24, as statements presented above, with respect to claims 1-5 and 8 are incorporated.

15. Claims 6-7, 14-15 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Overton (US 5,537,495) and Ohta (US 5,448,692) as applied to claims

1, 9 and 17 above, and further in view of Pearson et al. (US 4,528,693; refer to as Pearson herein).

16. Regarding claim 6, Overton discloses a pixel correction and smoothing method comprising:

The instructions on parameterizing and smoothing stored in pre-computed look-up table, indexed by the corresponding identifier (lines 1-11 of column 4; output tiles corresponds to the instructions used for rendering process). The combination of Overton and Ohta does not disclose a differential stored and the differential representing a difference between the location of at least one pixel in the new segment and the location of that pixel in the corresponding unprocessed segment. Pearson discloses a method for scaling image data utilize this method (lines 1-15 of abstract and lines 5-18 of column 4 and Fig. 1-3). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Pearson to provide the advantage of converting image to different size with minimum loss of information and with increased speed (lines 62-64 of column 1, Pearson). Also, both Overton and Pearson are directed to changing accuracy of subpixels.

17. Regarding claim 7, as statements presented above, with respect to claim 6 are incorporated.

18. Regarding claims 14-15, as statements presented above, with respect to claims 6-7 and 8 are incorporated.

19. Regarding claims 22-23, as statements presented above, with respect to claims 6-7 and 8 are incorporated.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Koyama (US 5,355,421);

Fujimoto (US 5,982,386);

Zhou et al. (US 5,600,772) ;

Cheung et al. (US 6,473,525).

Inquiry

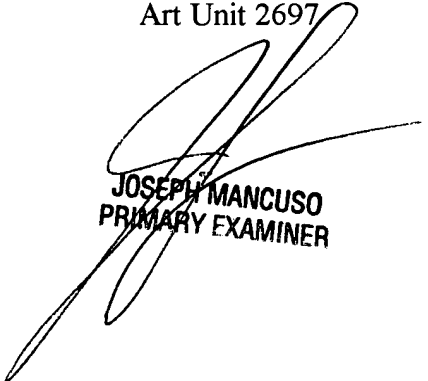
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Hofsass can be reached on (703) 305-4717. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6743 for regular communications and (703) 308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen
August 14, 2003

Po-Wei (Dennis) Chen
Examiner
Art Unit 2697


JOSEPH MANCUSO
PRIMARY EXAMINER

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